

Name _____

Surface Area and Volume

1. Use the drawing on page 275 and graph paper to make patterns for cubes with the following lengths:
 - 3 cm
 - 4 cm
 - 5 cm
 - 6 cm
2. Cut out your patterns and fold them. Then use the tabs to tape the sides together
 - Do NOT tape the top side down
3. Fill in the data table below to compare the surface area, volume, and ratio of surface area to volume of each cube (an example has been done for you)
 - **Show your work** to calculate surface area and volume
 - Be sure to include **units** for surface area and volume!
 - Reduce your ratio
4. Use your data table to answer the questions on the back of this page

Length of One Side	Surface Area (Length x Width x # of sides)		Volume (Length x Width x Height)		Ratio of Surface Area to Volume
	Show Work	Answer (with units)	Show Work	Answer (with units)	
2 cm	2 x 2 x 6	24 cm ²	2 x 2 x 2	8 cm ³	24/8
					3 : 1
3 cm					
4 cm					
5 cm					
6 cm					

Questions:

1. What happens to the ratio of surface area to volume as the cubes increase in size?
2. How many 3 cm cubes would fit in the same volume as the 6 cm cube?
3. Calculate the total surface area for all of the 3 cm cubes that would fit in the 6 cm cube? (Multiply your answer from number 2 by the surface area of one 3 cm cube)
4. How does the surface area change when a large cell divides into smaller cells that have the same total volume?
5. Why is it important for cells to have a large surface area to volume ratio?